

Scoring Instructions for NIH Toolbox®
v3.0 Emotion Measures:
Raw Score to T-Score Conversion Tables

8/30/2024



Table of Contents

Instructions for Using Raw Score to T-score Conversion Tables for NIH Toolbox® Emotion Instruments	3
NIH Toolbox Anger Fixed Form Ages 8-17 v3.0	5
NIH Toolbox Anger/Hostility Fixed Form Ages 18+ v3.0/v2.0.....	6
NIH Toolbox Anger/Physical Aggression Fixed Form Ages 18+ v3.0/v2.0	7
NIH Toolbox Apathy Fixed Form Ages 18+ v3.0/v2.0.....	8
NIH Toolbox Parent Report Fear/Over Anxious Fixed Form Ages 3-7 v3.0/v2.0	9
NIH Toolbox Parent Report Fear/Separation Anxiety Fixed Form Ages 3-7 v3.0/v2.0	10
NIH Toolbox Fear/Somatic Arousal Fixed Form Ages 18+ v3.0/v2.0	11
NIH Toolbox General Life Satisfaction Fixed Form Ages 8-12 v3.0/v2.0	12
NIH Toolbox Loneliness Fixed Form Ages 8-17 v3.0/v2.0	13
NIH Toolbox Loneliness Fixed Form Ages 18+ v3.0/v2.0	14
NIH Toolbox Perceived Hostility Fixed Form Ages 8-17 v3.0/v2.0	15
NIH Toolbox Perceived Rejection Fixed Form Ages 8-17 v3.0/v2.0	16
NIH Toolbox Perceived Stress Fixed Form Ages 18+ v3.0/v2.0	17
Uncalibrated NIH Toolbox v3.0/v2.0 Emotion (and Select Sensation) Measures	18

Instructions for Using Raw Score to T-score Conversion Tables for NIH Toolbox® Emotion Instruments

NIH Toolbox Uses T-scores

All analyses using NIH Toolbox Emotion measures should be conducted with T-scores. T-scores are standard scores in which a T-score of 50 represents the mean of the US general population (based on the 2010 Census) and 10 T-score units represents one standard deviation. We call these T-score “uncorrected” because they have not been corrected for any particular demographic category, such as gender. Age- and gender-corrected norms and T-scores for child and parent-report measures are available through the NIH Toolbox iPad app.

Types of NIH Toolbox Emotion Measures

NIH Toolbox Emotion measures can be administered as a CAT (tailored selection and administration of items from an item bank) or as a fixed length form. There is a table below for all emotion fixed length forms. These are titled “Fixed Form” or “FF”. Sometimes, a table is available if all items within an item bank were administered. These tables are labeled “Bank”. If there are 10 or more items in a measure, the measure’s table is labeled “Bank/Fixed Form”.

Scoring Instructions

Below are tables to convert raw summed scores into T-scores. Some electronic delivery systems (e.g., the NIH Toolbox iPad app, Assessment Center, HealthMeasures API) automatically provide normative scoring. If you are administering fixed forms on paper or outside of one of these systems, you will need to convert the raw summed score to the uncorrected T-score with the tables below.

First, find the table labeled with the name of the measure you wish to score. Then, follow these steps:

1. To obtain a summed score, add up the numbers assigned to each item’s response category, which are indicated on the PDF forms (obtained from <http://www.healthmeasures.net/search-view-measures>). For example:

Positive Affect (Ages 18+) – Fixed Form						
Please respond to each question or statement by marking one box per row.						
In the past 7 days:						
		Not at all	A little bit	Somewhat	Quite a bit	Very much
PA001	I felt cheerful	☒ 1	☐ 2	☐ 3	☐ 4	☐ 5
PA002	I felt attentive.....	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Note that the lowest number that may be assigned to any single item is either 0 or 1. So, the lowest score a participant may obtain, for example, on an 8-item fixed form is therefore 0 or 8. The sum of these scores for any one instrument is the **Raw Summed Score**.

2. Using the appropriate table below, find the row that corresponds to the raw summed score you calculated in step 1. Then, find the equivalent **Uncorrected T-score** in the same row. Use this number for reporting of summary results (e.g., group means).

Missing Item Responses

If an item is not answered by a given participant, you may substitute the mean score of the answered items (e.g., 3.5) as a substitute for the missing item. To do this, take the sum of the scores for the items answered, and divide this by the number of items the participant completed. We caution, however, that this should only be done when relatively few items are missing (e.g., less than 20%), for relatively few participants (less than 10%), and if your study aims to report group-level (not individual) scores. For additional scoring options when data are missing and for further consultation, please contact help@healthmeasures.net

NIH Toolbox Anger Fixed Form Ages 8-17 v3.0		
Raw Summed Score	T-Score	SE*
9	36.6	5.4
10	42.3	3.3
11	44.9	2.7
12	46.7	2.3
13	48.1	2.1
14	49.2	2.0
15	50.3	1.9
16	51.3	1.8
17	52.2	1.8
18	53.0	1.7
19	53.9	1.7
20	54.7	1.7
21	55.5	1.7
22	56.3	1.8
23	57.2	1.8
24	58.1	1.8
25	58.9	1.8
26	59.8	1.8
27	60.7	1.8
28	61.6	1.8
29	62.5	1.8
30	63.4	1.8
31	64.2	1.8
32	65.1	1.8
33	65.9	1.8
34	66.7	1.7
35	67.5	1.7
36	68.3	1.7
37	69.1	1.8
38	69.9	1.8
39	70.8	1.8
40	71.8	1.8
41	72.8	1.9
42	73.9	2.0
43	75.3	2.3
44	77.0	2.6
45	80.0	3.4

NIH Toolbox Anger/Hostility Fixed Form Ages 18+ v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
5	-1.34	0.60	36.3
6	-0.75	0.48	42.5
7	-0.43	0.45	46.1
8	-0.21	0.46	48.4
9	-0.04	0.47	50.2
10	0.12	0.47	52.0
11	0.26	0.47	53.4
12	0.39	0.46	54.8
13	0.51	0.46	56.2
14	0.63	0.45	57.4
15	0.74	0.45	58.7
16	0.85	0.45	59.8
17	0.96	0.44	60.9
18	1.06	0.44	62.0
19	1.16	0.44	63.1
20	1.25	0.44	64.1
21	1.35	0.44	65.2
22	1.44	0.44	66.2
23	1.54	0.44	67.2
24	1.63	0.44	68.2
25	1.73	0.44	69.2
26	1.82	0.43	70.2
27	1.92	0.43	71.3
28	2.04	0.45	72.6
29	2.11	0.42	73.4
30	2.27	0.46	75.0
31	2.28	0.36	75.1
32	2.50	0.44	77.6
33	2.66	0.45	79.3
34	2.79	0.45	80.6
35	3.02	0.45	83.1

NIH Toolbox Anger/Physical Aggression Fixed Form Ages 18+ v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
5	-0.66	0.73	42.1
6	0.08	0.54	50.5
7	0.35	0.51	53.4
8	0.44	0.53	54.5
9	0.60	0.52	56.2
10	0.77	0.48	58.2
11	0.83	0.52	58.9
12	1.03	0.42	61.1
13	1.15	0.40	62.4
14	1.25	0.39	63.6
15	1.35	0.38	64.7
16	1.44	0.37	65.8
17	1.53	0.36	66.8
18	1.62	0.35	67.8
19	1.70	0.34	68.7
20	1.79	0.34	69.6
21	1.87	0.34	70.5
22	1.95	0.33	71.4
23	2.03	0.33	72.3
24	2.11	0.33	73.2
25	2.19	0.33	74.2
26	2.27	0.33	75.1
27	2.36	0.33	76.0
28	2.44	0.34	77.0
29	2.54	0.34	78.0
30	2.63	0.35	79.1
31	2.72	0.34	80.1
32	2.84	0.35	81.4
33	2.95	0.36	82.7
34	3.07	0.35	84.1
35	3.30	0.36	86.6

NIH Toolbox Apathy Fixed Form Ages 18+ v3.0/v2.0		
Raw Sum Score	T-Score	SE
7	37.0	5.9
8	42.4	4.5
9	45.6	3.9
10	48.1	3.6
11	50.3	3.4
12	52.3	3.3
13	54.1	3.2
14	55.7	3.2
15	57.4	3.2
16	59.0	3.2
17	60.6	3.2
18	62.1	3.2
19	63.7	3.2
20	65.2	3.2
21	66.7	3.2
22	68.3	3.2
23	69.9	3.3
24	71.7	3.3
25	73.5	3.5
26	75.5	3.6
27	77.8	3.8
28	80.5	4.0

NIH Toolbox Parent Report Fear/Over Anxious Fixed Form Ages 3-7 v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
0	-1.10	0.70	37.6
1	-0.52	0.61	44.1
2	-0.06	0.57	49.3
3	0.34	0.54	53.9
4	0.70	0.53	57.9
5	1.04	0.52	61.8
6	1.36	0.52	65.4
7	1.68	0.52	69.0
8	2.00	0.53	72.6
9	2.34	0.53	76.5
10	2.69	0.51	80.5
11	3.03	0.48	84.3
12	3.35	0.41	87.9

NIH Toolbox Parent Report Fear/Separation Anxiety Fixed Form Ages 3-7 v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
0	-0.75	0.74	40.5
1	-0.01	0.64	49.3
2	0.50	0.58	55.4
3	0.91	0.55	60.3
4	1.27	0.53	64.6
5	1.60	0.52	68.6
6	1.91	0.50	72.3
7	2.2	0.49	75.7
8	2.48	0.49	79.1
9	2.74	0.48	82.2
10	2.99	0.46	85.2
11	3.22	0.43	87.9
12	3.41	0.38	90.2
13	3.55	0.32	91.9
14	3.66	0.27	93.2

NIH Toolbox Fear/Somatic Arousal Fixed Form Ages 18+ v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
6	-0.99	0.72	37.9
7	-0.44	0.64	44.4
8	-0.05	0.60	49.0
9	0.26	0.59	52.5
10	0.52	0.58	55.7
11	0.77	0.55	58.6
12	0.99	0.54	61.2
13	1.20	0.53	63.6
14	1.39	0.52	65.9
15	1.58	0.51	68.1
16	1.76	0.51	70.3
17	1.94	0.51	72.3
18	2.11	0.50	74.4
19	2.29	0.50	76.4
20	2.46	0.50	78.4
21	2.63	0.49	80.4
22	2.79	0.49	82.4
23	2.96	0.47	84.3
24	3.12	0.46	86.2
25	3.26	0.43	87.9
26	3.39	0.40	89.4
27	3.50	0.36	90.7
28	3.59	0.32	91.7
29	3.66	0.29	92.6
30	3.71	0.25	93.2

NIH Toolbox General Life Satisfaction Fixed Form Ages 8-12 v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
5	-3.07	0.42	15.8
6	-2.80	0.41	18.9
7	-2.57	0.40	21.7
8	-2.38	0.39	23.9
9	-2.20	0.38	26.0
10	-2.03	0.38	28.1
11	-1.86	0.38	30.1
12	-1.70	0.39	32.0
13	-1.53	0.39	34.0
14	-1.36	0.40	36.0
15	-1.18	0.41	38.1
16	-1.00	0.43	40.2
17	-0.80	0.44	42.6
18	-0.61	0.44	44.8
19	-0.41	0.44	47.2
20	-0.19	0.44	49.8
21	0.06	0.45	52.8
22	0.34	0.45	56.1
23	0.66	0.46	59.9
24	1.03	0.49	64.2
25	1.54	0.59	70.3

NIH Toolbox Loneliness Fixed Form Ages 8-17 v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
7	-1.12	0.58	38.5
8	-0.49	0.36	45.0
9	-0.20	0.30	48.0
10	0.02	0.26	50.2
11	0.20	0.26	52.1
12	0.37	0.25	53.8
13	0.52	0.25	55.4
14	0.67	0.25	56.9
15	0.81	0.25	58.4
16	0.97	0.26	60.0
17	1.12	0.26	61.6
18	1.27	0.27	63.1
19	1.42	0.27	64.7
20	1.56	0.28	66.2
21	1.71	0.29	67.6
22	1.85	0.29	69.1
23	1.99	0.28	70.5
24	2.13	0.27	72.0
25	2.25	0.26	73.3
26	2.38	0.25	74.6
27	2.49	0.24	75.7
28	2.60	0.24	76.9
29	2.71	0.24	78.0
30	2.82	0.25	79.2
31	2.94	0.25	80.4
32	3.07	0.26	81.7
33	3.21	0.28	83.2
34	3.34	0.27	84.5
35	3.52	0.26	86.4

NIH Toolbox Loneliness Fixed Form Ages 18+ v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
5	-1.24	0.57	37.1
6	-0.62	0.37	43.7
7	-0.30	0.32	47.1
8	-0.05	0.30	49.8
9	0.17	0.29	52.1
10	0.37	0.29	54.3
11	0.57	0.29	56.4
12	0.77	0.29	58.5
13	0.97	0.29	60.7
14	1.17	0.29	62.8
15	1.37	0.30	64.9
16	1.56	0.30	66.9
17	1.75	0.30	68.9
18	1.93	0.29	70.9
19	2.10	0.28	72.7
20	2.27	0.28	74.4
21	2.43	0.28	76.2
22	2.60	0.28	78.0
23	2.79	0.29	80.0
24	3.00	0.30	82.2
25	3.28	0.32	85.2

NIH Toolbox Perceived Hostility Fixed Form Ages 8-17 v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
5	-1.90	0.47	30.9
6	-1.39	0.33	36.0
7	-1.09	0.30	39.2
8	-0.83	0.29	41.7
9	-0.61	0.28	44.0
10	-0.40	0.28	46.2
11	-0.19	0.29	48.3
12	0.03	0.29	50.6
13	0.26	0.30	52.9
14	0.49	0.31	55.2
15	0.73	0.31	57.6
16	0.97	0.31	60.1
17	1.19	0.30	62.3
18	1.39	0.29	64.4
19	1.57	0.28	66.2
20	1.75	0.27	68.0
21	1.92	0.27	69.7
22	2.10	0.28	71.6
23	2.30	0.29	73.6
24	2.52	0.32	75.8
25	2.87	0.38	79.4

NIH Toolbox Perceived Rejection Fixed Form Ages 8-17 v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
5	-1.20	0.58	37.5
6	-0.57	0.37	44.0
7	-0.27	0.32	47.2
8	-0.03	0.29	49.7
9	0.18	0.28	51.8
10	0.37	0.28	53.8
11	0.55	0.28	55.7
12	0.74	0.28	57.6
13	0.92	0.28	59.6
14	1.12	0.28	61.6
15	1.31	0.29	63.6
16	1.49	0.29	65.4
17	1.66	0.29	67.2
18	1.83	0.28	69.0
19	1.99	0.27	70.6
20	2.15	0.27	72.2
21	2.30	0.27	73.8
22	2.46	0.27	75.4
23	2.63	0.28	77.2
24	2.83	0.30	79.4
25	3.14	0.34	82.6

NIH Toolbox Perceived Stress Fixed Form Ages 18+ v3.0/v2.0			
Raw Sum Score	Theta Score	Theta SD	Uncorrected T-Score
10	-2.76	0.49	22.7
11	-2.45	0.46	25.8
12	-2.19	0.44	28.5
13	-1.95	0.42	30.9
14	-1.74	0.40	33.0
15	-1.54	0.39	35.0
16	-1.36	0.38	36.9
17	-1.18	0.38	38.7
18	-1.01	0.37	40.4
19	-0.85	0.37	42.0
20	-0.69	0.37	43.7
21	-0.53	0.37	45.3
22	-0.37	0.37	46.9
23	-0.22	0.37	48.4
24	-0.07	0.37	49.9
25	0.09	0.37	51.5
26	0.24	0.37	53.0
27	0.39	0.37	54.5
28	0.54	0.37	56.1
29	0.69	0.37	57.5
30	0.83	0.37	59.0
31	0.98	0.37	60.5
32	1.12	0.37	61.9
33	1.26	0.37	63.4
34	1.40	0.37	64.8
35	1.54	0.37	66.2
36	1.68	0.36	67.6
37	1.82	0.36	69.0
38	1.96	0.36	70.4
39	2.09	0.36	71.8
40	2.23	0.36	73.1
41	2.37	0.36	74.5
42	2.51	0.37	75.9
43	2.65	0.37	77.4
44	2.80	0.37	78.9
45	2.95	0.38	80.4
46	3.10	0.37	81.9
47	3.25	0.36	83.4
48	3.38	0.34	84.8
49	3.51	0.31	86.0
50	3.61	0.28	87.1

Uncalibrated NIH Toolbox v3.0/v2.0 Emotion (and Select Sensation) Measures

The following NIH Toolbox measures are uncalibrated, thus do not generate T-Scores:

- NIH Toolbox General Life Satisfaction Parent Report Fixed Form Ages 3-12 v3.0/v2.0
- NIH Toolbox Pain Intensity Fixed Form Ages 18+ v3.0/v2.0
- NIH Toolbox Peer Rejection Parent Report Fixed Form Ages 3-12 v3.0/v2.0
- NIH Toolbox Positive Peer Interaction Parent Report Fixed Form Ages 3-12 v3.0/v2.0
- NIH Toolbox Social Withdrawal Parent Report Fixed Form Ages 3-12 v3.0/v2.0

Raw summed scores from these measures can be used for descriptive purposes only.